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M. Charnay found the ruins of an ancient city, which he named after his generous patron. In his explorations here, he was assisted by a young Englishman, Mr. Alfred Maudslay, with whom he shares the honor of discovery. The town is about  $17^{\circ}$  N., on the left bank of the Usumacinta, on the boundaries of Guatemala and the two Mexican provinces of Chiapas and Tabasco. The ruins resemble those of Palenque in the material, arrangement of interiors, decorations, and glyphs. The great stone slabs of Palenque carved with inscriptions and bas-reliefs, are replaced here by lintels covered with superb sculpture (cf. i. 1008.)—(*Proc. roy. geogr. soc.*, v. 44.) J. W. P.

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**Shaking towers.**—Col. Lovett, in his journey through northern Persia, visited the shrines of some dervishes, near which is a minar, curious for possessing the same property that makes the shaking towers of Ispahan famous. When shaken by a man standing on the top, it oscillates sufficiently to cause a brick placed on the edge of the cornice to fall. It is about thirty-five feet high, and six feet diameter at the base, tapering gently upwards. This property of vibrating is attributed at Bostam, as it is at Ispahan, to miraculous interposition of the local saint. It is, of course, due to the elasticity of the bricks and cement used, the latter becoming more elastic with age.—(*Proc. roy. geogr. soc.*, v. 80.) J. W. P.

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**Explorations in Guatemala.**—Mr. A. P. Maudslay, mentioned in M. Charnay's researches, has published separately some of his own personal explorations, with a map and ground-plans. Starting from Livingstone, Guatemala, he first visited Quirigua, whose ruins consist of raised mounds and terraces, usually faced with stone, and near to these, carved monoliths. The latter are of two kinds: high upright stones, ornamented with human figures and tables of hieroglyphics; and low broad stones, in the shape of some animal. The first named measure three to five feet across, and 12 to 25 feet out of the ground. On both back and front, the principal ornament is a human figure in relief, decked out in the barbaric splendor usual throughout Central America. Mr. Maudslay suggests that the inevitable human face on the thorax may explain the function of the great number of masks from this quarter. The second class of carvings is very interesting. One specimen, weighing about eighteen tons, represents a turtle having a human head, with projecting ears richly ornamented. In place of the tail is the life-sized figure of a woman sitting cross-legged, and holding a manikin sceptre in her hand. The whole surface of the block is profusely ornamented. Nowhere in the neighborhood are there traces of houses. The exploration at Quirigua led to an attempt to fix the site of Chaciyal, mentioned by Cortez.

Leaving this spot, Mr. Maudslay visited Copan, where the sculptures impressed him as being above those of Quirigua in execution. From Copan our traveller wandered next to Tikal, north-east of Lake Peten, only once before visited by a foreigner, Bernouilli. All the houses here are built of stone, and

coated with plaster. Inside, the walls are seven to eight feet high, and the stone roof forms a narrow gable. The rooms within are very narrow, resembling long passages. The town was laid out in a rectangular form, the slopes terraced with sustaining walls. The houses are often built on raised foundations, stone-faced in the same manner. The most imposing buildings are the five temples raised on pyramidal foundations, in front of which are steep stairways leading up to the doors of the temples. There is no trace of any idol or object of worship in these buildings, but carved slabs and circular altars are found in the plaza. The next point of interest was a ruined town on the Usumacinta. On the top of a steep bank 60 feet high stands the first row of houses, and the town is built on a succession of stone-faced terraces reaching more than 250 feet in height. Instead of the long, narrow interiors as at Tikal, the houses are broken into a number of recesses by buttresses supporting the roof at intervals, and stone is used instead of sapote-wood for lintels. One of the houses at Usumacinta is minutely described by Mr. Maudslay. In nearly all the houses, around the idols, stand earthen pots partly filled with some resinous substance, which the Lacandon Indians probably placed there, showing that the old faith has not died out. At this point Mr. Maudslay met M. Charnay. This very important paper closes with a short sketch of the Lacandones.—(*Proc. roy. geogr. soc.*, v. 185.) O. T. M.

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#### NOTES AND NEWS.

News of a serious character has been received from the Greely relief expedition. The Proteus and Yantic sailed from St. Johns, Newfoundland, June 29. They arrived safely at Disco on the 6th and 12th of July respectively. The Proteus with Lieut. Garlington and the relief party, with supplies, etc., sailed from Disco for Cory island, arriving on the 16th. On the 21st she started for Smith sound, and reached a point in latitude  $78^{\circ} 52'$ , longitude  $74^{\circ} 25' W.$ , a few miles north and west of Cape Sabine, where she was beset and crushed in the pack. The party succeeded in saving boats and provisions sufficient to sustain them during their retreat, and made their way across Smith sound and along the eastern shore to Cape York, and reached Upernavik on the 24th of August, all well. Records had been left at Littleton island which apprised the Yantic, on her arrival, of the disaster. A search was immediately instituted, and on reaching Upernavik, Sept. 2, it was found that the Proteus party, after suffering severe hardships, and traversing six hundred miles of the Arctic sea, had arrived in safety. No news was obtained of the Greely party, no supplies had been landed for them, and their situation must be considered as grave. Some rumors had reached the Danish settlements by parties of Eskimo, which, however, are not to be considered as of any weight; and there is yet no reason for supposing that any ill fortune, further than the loss of anticipated supplies, has befallen Lieut. Greely and

his companions. The failure to land supplies was probably due to the conditions of the ice at Littleton island, but nothing can be stated with certainty in advance of more explicit information. The Yantic, with the rescued party, arrived at St. Johns, Sept. 13.

— At a meeting of the Scottish meteorological society, July 26, the following scheme, according to *Nature*, was adopted, looking to the establishment of a zoological station in the Firth of Forth:—

It is proposed to enclose the Granton quarry, which has an area at high water of about ten acres, and depths varying to sixty feet, so as to regulate the inflow and outflow of the tide in such a manner, that, while admitting abundance of sea-water at each tide, fish and other animals will be prevented from escaping out of the enclosure. This will be done by means of stakes and wire, with other kinds of netting. The quarry will then be stocked with all kinds of fish and marine invertebrates. When it is desired to separate fish or other animals for special study, this will be done by floating or fixed wire and wood cages.

A barge about sixty-four feet by twenty-seven feet, of great stability, will be moored in the enclosure; upon this will be built a house with laboratories, workrooms, and a library; it will also be furnished with a small windmill to pump up sea-water into a tank on the roof. The water in this tank will be conveyed by pipes to the various tiled tables, glass jars, and aquaria of the establishment. A small cottage will be built on the shore for the accommodation of the keeper and engineer, with one or two spare rooms. A steam pinnace for dredging and making observations in the Firth of Forth and the North sea will be attached to the station.

A naturalist will be appointed whose duty will be to make continuous observations and experiments, assisted by the engineer and keeper. There will be ample accommodation for four other naturalists to work at the station, and carry on investigations; and, so far as the accommodation will permit, British and foreign naturalists will be invited to make use of the station free of charge.

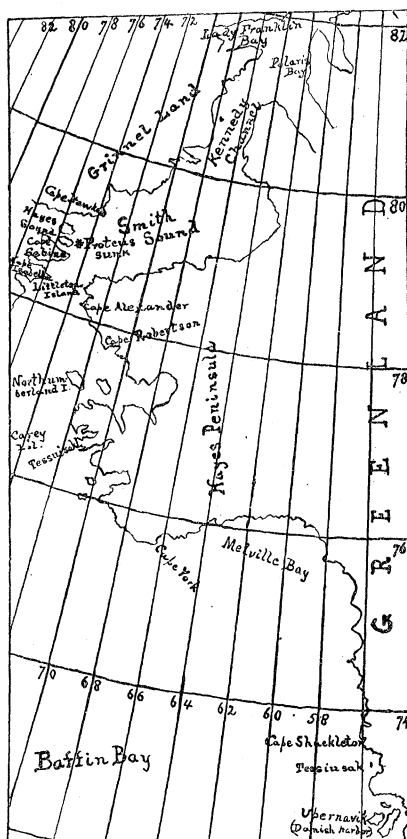
Towards the carrying-out of this scheme, the Duke of Buccleuch has liberally granted a lease of the quarry at a nominal rent, with permission to erect a cottage on the shore. A gentleman who takes a warm interest in the progress of research in Scotland

has offered 1,000*l.* to construct the barge, and fit it up with laboratories and workrooms. Mr. J. Y. Buchanan has promised to fit up one of the rooms on the barge as a chemical laboratory suited to the requirements of the station; Mr. Thomas Stevenson, the society's honorary secretary, has agreed to give his professional services in enclosing the quarry gratuitously; and Mr. John Anderson has undertaken to provide the station with a salmon and trout hatchery. Mr. John Murray will furnish the laboratories with apparatus, and place his large zoological library at the service of workers. A number of gentlemen have promised to support the undertaking when once commenced; and it is expected that within a few months the station will be presented with a steam-pinnace and with funds for the erection of a cottage on the shore, — the only desiderata to complete the scheme.

The society granted three hundred pounds for the first year, and two hundred and fifty pounds each for the two succeeding years, toward the expenses of the station. It is expected that by the beginning of November the proper work of the station will be begun. Already several distinguished naturalists have signified their intention to avail themselves of the altogether unique facilities which will be afforded by this zoological station for the successful prosecution of biological research.

— In a report on the mineral resources of the United States, during 1882 and the first half of 1883, shortly to be published by the U. S. geological survey, Mr. Albert Williams, jun., has compiled a series of special statistics, of which the following totals will be of interest to our readers.

Omitting the local consumption, there were mined 43,130,863 tons of Pennsylvania anthracite, and 87,963,038 tons of other qualities of coal, including a small amount of anthracite won outside of Pennsylvania; the respective colliery values being \$97,044,442 and \$109,953,797. Of iron, 1,350,000 tons were mined, worth \$44,775,000; while there were consumed in all the iron and steel works, including furnaces, 5,610,000 tons of anthracite and 9,740,000 tons of bituminous coal, 5,130,000 tons of coke, 145,750,000 bushels of charcoal, and 5,800,000 tons of limestone. The product of gold is estimated at \$48,750,000, and of silver at \$70,200,000. In other words, the mint value of the precious-metal product



was \$88,048,239 less than the colliery value of the coal produced during the same eighteen months.

Of crude petroleum, 41,415,163 barrels, valued at \$35,010,476, were produced, — a diminishing product with an increasing value; while 149,646,232 pounds of copper were mined, valued in New York at \$24,538,091, — an increasing product with a diminishing value.

The lead product was 202,890 tons, worth in New York \$18,924,550; and of zinc, 51,765 tons, valued at \$5,311,620. 75,472 flasks, or 5,873,508 pounds, of mercury were produced, worth in San Francisco \$2,100,750. Of nickel, the product in 1882 was 281,616 pounds, worth \$209,777, but the reduction-works closed in 1883; while of cobalt, ore and matte, the product for 1882 was valued at \$15,000.

Of other metals, there were mined in 1882, 3,500 tons of manganese, with a spot value of \$52,500; 2,500 tons of chromium, worth in Baltimore \$100,000; and 60 tons of antimony, worth about \$12,000. It is stated that a trifling amount of tin ore has been mined, and the production of metallic tin on a small scale begun.

The estimated value of the building-stone quarried in 1882 is \$21,000,000; grindstones, \$700,000; soap-stone, \$90,000 (6,000 tons); brick and tile made, \$34,000,000; whiteware, \$5,000,000; lime, \$21,700,000 (31,000,000 bbls.); cements, \$3,672,750 (3,250,000 bbls.); pumice quarried, \$1,750 (70 tons); phosphates dug, \$1,992,462 (332,077 tons); marl, \$540,000 (1,080,000 tons); mica, \$250,000 (75,000 lbs.); barytes, \$160,000 (20,000 tons); asbestos, \$36,000 (1,200 tons); and asphaltum, \$10,500 (3,000 tons). There were further produced in 1882 and 1883, 9,618,569 barrels (2,693,196,520 lbs.) of salt, valued at \$6,480,210; 2,100,750 pounds of borax, worth \$562,903; and in 1882, of sodic carbonate, over 1,600,000 pounds; and of copperas, 15,000,000, worth \$112,500.

The value of precious stones found in 1882 was, before cutting between \$10,000 and \$15,000; after cutting, between \$50,000 and \$60,000. And there were mined 500 tons of corundum, valued at \$6,250; 75,000 tons of quartz; and in 1882 and 1883, 687,500 pounds of graphite, worth \$55,000.

The total value of the metals produced in the United States, during 1882, is estimated at \$219,756,004; and of the non-metallic mineral substances, \$234,156,402: making the total mineral product \$453,912,406.

No data seem to have been obtained regarding many of the minor mineral products, while in the majority of cases the figures appear to be approximations only. These defects can doubtless be remedied, in the future, by the adoption of better laws and methods for the collection of our mineral statistics.

— Hachette publishes a book of travel by Edmond Cotteau, entitled 'De Paris au Japon à travers la Sibirie.' It is well illustrated, and, apart from the illustrations, is especially valuable as indicating how unchanged and identical the civilization of old Russia, as seen in Moscow and similar cities, has been transplanted, as it were bodily, to successive and nu-

merous localities stretching from the Ural to the Pacific, and to the borders of the Arctic Sea.

— A dainty and unique little book is published by Charles F. Lummis of Chillicothe, O. It is a miniature quarto, 6.5×7.5 cm. in size, made of twelve leaves cut from the thin paper-like layers of birch bark. Appropriate woodcuts cover the slightly thicker outer pages, while the interior is given to 'Birch-bark poems, vol. ii.,' by the publisher. We cannot say much for the eight little 'poems,' of which only the first, on 'silver-birches,' has any special appropriateness; but the setting is excellent and attractive, and reflects well the taste and skill of the author.

— The *Manchester guardian* of July 18 gives the following report of M. Pasteur's speech at Dôle on July 14, when his fellow-townsmen placed a memorial tablet in the wall of the house in which he was born. The tablet says simply, "Here was born Louis Pasteur, Dec. 27, 1822." M. Pasteur's remarks were as follows: "I am deeply touched by the honor which the town of Dôle has conferred upon me; but permit me, while expressing my gratitude, to deprecate this excess of glory. In rendering to me the homage which is usually rendered only to the illustrious dead you encroach too hastily upon the judgment of posterity. Will it ratify your decision? And ought not you, Mr. Mayor, to have prudently warned the municipal council against so hasty a resolution? But, having protested against this outburst of an admiration which I do not merit, permit me to say that I am touched to the bottom of my heart. Your sympathy has united in this commemorative tablet two great things which have been at once the passion and the charm of my life, — love of science, and reverence for the paternal home. — O my father and my mother! O my dear departed, who so modestly lived in this little house! it is to you that I owe all. Your enthusiasms, my brave mother, you transmitted them to me. If I have always associated the greatness of science with the greatness of the country, it was because I have been full of the sentiments with which you inspired me. And you, my dear father, whose life was as rude as your rude trade, you showed me what patience and sustained effort could accomplish. It is to you that I owe the tenacity of my daily work. Not only had you the persevering qualities which made life useful, but you had an admiration for great men and great things. 'Look above, learn there, seek to rise always,' — this was your teaching. I see you again after your day's labor, reading some story of battle from a book of contemporary history which recalled to you the glorious epoch which you had witnessed. In teaching me to read, it was your care to teach me the greatness of France. Be blessed both of you, my dear parents, for what you were; and let me transfer to you the homage which is to-day bestowed upon this house. — Gentlemen, I thank you for giving me the opportunity of saying aloud what I have thought for sixty years. I thank you for this celebration and for your reception; and I thank the town of Dôle, which does not forget any of its children, and which has borne me in such remembrance." M. Pasteur's father was a tanner.